STORAGE CABINET WITH LOCKING SYSTEM HAVING DUAL RELEASE MEMBERS

Field of the Invention

The present invention is directed generally to storage cabinets, and more particularly to locking systems for storage cabinets.

Background of the Invention

Large storage cabinets used in the construction industry are often formed of steel sheet. Such cabinets typically include opposed side walls, a rear wall, a floor, a ceiling, and one or two doors that are pivotally mounted on the front edges of the side walls to provide access to the cabinet from the front. The floor, walls and ceiling of the cabinet can be formed either from a single sheet of steel that is bent at intersecting edges of these surfaces or from multiple pieces of sheet steel that are welded together. Often, such a cabinet will also include one or more shelves which facilitate the storage of tools and other items. Also, many cabinets have bolsters underlying the floor, and some will include casters beneath the bolsters. The doors of the cabinet are typically formed of a single sheet of steel and, with the exception of narrow finishing flanges around the edges, they are relatively flat. Typical sizes for such a cabinet can range from 40 ft^3 to 60 ft^3 or even larger. Exemplary storage cabinets include those sold under the name JOBOX® by Delta Consolidated Industries, Jonesboro, Arkansas and those sold under the name JOBMASTER® by Knaack Manufacturing, Crystal Lake, Illinois.

As noted above, many storage cabinets of the type described above have doors pivotally attached to the front edges of the side walls to alternatively allow and prevent access to the cavity of the cabinet from the front. Generally such cabinets have a vertical support member that is mounted to and extends from the floor to the ceiling. The support member is positioned such that it spans the gap between the free edges of the doors when they are closed. Each door will typically

have an engaging member of a latch (such as a hook) attached near its free edge that interacts with a latching mechanism attached to the support member. As an example, one latching mechanism includes horizontally-disposed pins that engage with hooks on the doors and thereby latch the doors in place. The pins are mounted on a vertical rod that is slidably mounted to the rear surface of the support member. The pins can be raised to unlatch the doors via a lever or knob that extends forwardly from the vertical rod through a vertical slot in the support member.

Many cabinets will also include a locking system that enables the doors to be locked in the latched position. One such locking system (illustrated in U.S. Patent Nos. 4,290,281 and 5,076,078 to Weger, Jr.) includes a "pocket" located in the vertical support member that houses a padlock. The padlock is disposed horizontally within the pocket, with the "key insertion end" of the padlock body being exposed for forward access through the pocket, and the shackle of the padlock extending toward the cavity of the storage cabinet and being restrained by a bracket within the pocket. The body and shackle surround an upright notched member that is attached to and moves vertically with the latching mechanism. When the padlock is locked, the body engages the notch of the notched member, so vertical movement of the latching mechanism is prevented (i.e., the doors of the cabinet are locked and remain locked). When the padlock is unlocked, horizontal movement of the body away from the shackle creates sufficient space for the notched member to become disengaged from the body, and the latching mechanism is free to move vertically to unlatch the doors of the cabinet. This type of locking configuration is particularly desirable for storage cabinets used and left overnight at construction sites, as the pocket protects the lock from being destroyed by someone severing the shackle with a bolt cutter or a similar tool.

One difficulty with the latching and locking mechanisms of current storage cabinets is the inconvenience of opening the cabinet when an operator's hands are full. Even if the cabinet is unlocked and the latching mechanism is free

to move, the operator is forced to reach with his hand to grasp and pull the latching lever. If many items are being carried, or if an item being carried is particularly heavy or bulky, the operator may be forced either to set down some or all of his load or to balance the load with one hand and arm in order to unlatch the doors of the cabinet.

Another performance issue of current latching systems presents itself when the operator wishes to close the doors. With the system described above, often the latching mechanism will remain in the unlatched position after unlatching, either simply by friction or through a subassembly designed for this purpose. An operator opens the doors by moving release lever to the unlatched position, at which time both doors would have the opportunity to open. Often, both doors tend to open; this is particularly true if the cabinet is positioned on uneven ground, with the front of the cabinet being lower than the rear of the cabinet. If the operator reaches in to gather items from within the cabinet and has his hands full, closing and latching the doors is difficult, because the latch remains in the unlatched position until actively moved back by the operator. A related problem occurs when the operator wishes to open only one door; with the latching mechanism in the unlatched position, the door that he wishes to remain closed will have a tendency to open unless he actively moves the release lever back to the locking position after opening the door he wishes to open.

Another shortening of the current cabinets is the tendency of the bolsters to fracture when casters are mounted thereunder. The bolsters are typically formed of a single sheet of steel bent into the shape of an open rectangular box. The cabinets are often loaded sufficiently that bolsters of this structure may have inadequate strength to support the load; as a result, the bolsters fail at the mounting locations of the casters.

Summary of the Invention

The present invention can address the shortcomings of prior latching systems by enabling the operator to unlatch the doors by using either of an upper

release member (which is positioned at a height convenient for operation by hand) or a lower release member (which is positioned at a height convenient for operation by foot). One embodiment of such a storage cabinet comprises: a container having a floor, upright side walls and a rear wall attached to and extending upwardly from the floor, and a ceiling attached to the side walls and rear wall, the floor, side walls, rear wall, and ceiling defining a storage cavity; a vertical support member extending upwardly from the floor; at least one door pivotally attached to one of the side walls and movable between an open position, in which the cavity is accessible from a position forward thereof, and a closed position, in which the door contacts the support member and prevents access to the cavity from a position forward thereof; and a latching mechanism attached to the support member. The latching mechanism includes two release members protruding forwardly from the support member, wherein an upper one of the release members is positioned above a lower one of the release members. The release members are movable in unison from a latched position, in which the latching mechanism latches the door in the closed position, and an unlatched position, in which the latching mechanism allows the door to move to the open position. In this configuration, an operator carrying a load with both hands can choose to unlatch the door by hand or by foot, depending on which method is more convenient.

A preferred embodiment of the storage cabinet includes two doors, each of which includes a front panel that is forwardly spaced from said support member, and the upper and lower release members are of a length such that they do not protrude forwardly beyond the front panels of the doors. This protects passers-by from snagging clothing on the release levers.

In another embodiment, a storage cavity of the present invention includes a container, a support member and at least one door as defined above, and further includes a latching mechanism having at least one release member protruding forwardly from the support member and being movable from a latched position, in which the latching mechanism latches the door in the closed position, and an unlatched position, in which the latching mechanism allows the door to move to

the open position. The latching mechanism also includes a generally vertically disposed post that is slidably mounted on the support member for vertical movement relative thereto. The post is attached to the at least one release member. The latching mechanism further includes a biasing unit (for example, a spring) that biases the latching mechanism toward the latched position. This configuration enables the latching mechanism to move from the unlatched position to the latched position without the operator actively causing this action. This feature can assist in keeping one or more doors of the cabinet closed.

Another aspect of the present invention is a bolster assembly that can be used with storage cabinets of the type described above. Such a bolster assembly includes: a lower channel having a horizontally-disposed floor and opposed upright side walls; a front bracket having a horizontally-disposed floor and an upright front wall, wherein the front bracket floor is attached to and overlies a front portion of the lower channel floor; a rear bracket having a horizontally-disposed floor and an upright rear wall, wherein the rear bracket floor is attached to and overlies a rear portion of the lower channel floor; a front castor attached to and underlying the front portion of said lower channel; and a rear castor attached to and underlying the rear portion of said lower channel. A bolster assembly of this configuration can provides a reinforced mounting location for the casters that reduces the tendency of the bolster to fail under load.

Brief Description of the Figures

Figure 1 is a perspective view of a storage cabinet of the present invention with the doors in the closed position, the latching mechanism in the latched position, and the padlock locked.

Figure 2 is a cutaway perspective view of the storage cabinet of **Figure 1** with the latching mechanism in its latched position.

Figure 3 is a cutaway perspective view of the storage cabinet of **Figure 1** with the latching mechanism in the unlatched position.

Figure 4 is a perspective view of the storage cabinet of **Figure 1**

with the doors in the open position and the latching mechanism in its latched position.

Figure 5 is an enlarged partial side section view of the latching mechanism and support member of the storage cabinet of **Figure 1** taken along lines **5—5** thereof with the latching mechanism in its latched position.

Figure 6 is an enlarged partial side view of the support member and latching mechanism of **Figure 5** taken along lines **6—6** of **Figure 3** with the padlock unlocked and the latching mechanism in its unlatched position.

Figure 7 is a rear perspective view of the support member and latching mechanism of **Figure 5** with the latching mechanism in its unlatched position.

Figure 8 is an exploded rear perspective view of the support member and latching mechanism of **Figure 5**.

Figure 9 is a rear view of the support member and latching mechanism of **Figure 5** with the latching mechanism in its latched position and the padlock in a locked condition.

Figure 10 is a bottom, partially exploded, perspective view of the floor, bolsters and casters of the storage cabinet of **Figure 1**.

Detailed Description of the Invention

The present invention now will be described more fully hereinafter with reference to the accompanying drawings, in which preferred embodiments of the invention are shown and described. This invention may, however, be embodied in many different forms and should not be construed as limited to the embodiments set forth herein; rather, these embodiments are provided so that this disclosure will be thorough and complete, and will fully convey the scope of the invention to those skilled in the art. Like numbers refer to like components throughout. Some layers, thicknesses, and other dimensions may be exaggerated for clarity.

Turning now to the drawings, a storage cabinet, designated broadly at **20**, is illustrated in **Figures 1-4**. The cabinet **20** includes a generally horizontal

floor **22** supported by three bolsters **102**, two side walls **24a, 24b** that rise vertically from opposite lateral edges of the floor **22**, a rear wall **26** that rises vertically from the rear edge of the floor **22**, and a ceiling **28** that extends horizontally between the top edges of the side walls **24a, 24b** and the rear wall **26.** The floor **22**, sidewalls **24a, 24b**, rear wall **26** and ceiling **28** define a storage cavity **29**.

The floor **22**, side walls **24a, 24b**, rear wall **26** and ceiling **28** are formed of a single piece of sheet steel bent into the illustrated box-type shape; those skilled in this art will recognize that, although such unitary construction is preferred, the cabinet **20** of the present invention may be formed of multiple pieces of material. If sheet steel is employed, a sheet thickness of between about 12 and 22 guage is preferred.

Each of the side walls **24a, 24b** includes a recess **30** within which a pivoting handle **31** is mounted; such recesses and handles are described in U.S. Patent No. 4,288,134 to Weger, the disclosure of which is hereby incorporated herein by reference in its entirety. Three shelves **32** are mounted within the cabinet **20** to facilitate the storage of items therein (of course, the floor can also be used for storage).

The cabinet **20** further includes two doors **34a, 34b**, each of which is pivotally interconnected with a front edge **24f** of a respective sidewall **24a, 24b** via a "piano hinge" type pivot **35**. Each door **34a, 34b** is pivotable between an open position (see **Figure 4**) in which the cavity **29** is accessible from a position forward thereof, and a closed position (**Figures 1** through **3**), in which the door **34a** confronts the front edges of the floor **22**, side walls **24a, 24b** and ceiling **28** and prevents forward access to the cavity **29** from a position forward thereof. The doors **34a, 34b** are mirror images of each other about a vertical plane **P** that extends perpendicularly to the rear wall **26**. As such, only the door **34a** will be described herein, with the understanding that the discussion is equally applicable to the door **34b**. It should also be understood that, when describing a component of the door **34a** relative to the "front" or "rear" of the door **34a**, these directions are the same as the front and rear directions of the cabinet **20** and refer to the

orientation of the components of the door **34a** when the door **34a** is in the closed position shown in **Figures 1** through **3**.

The door **34a** includes a front panel **36,** side and handle panels **37, 38** that extend rearwardly from the front panel **36**, and top and bottom panels **39a, 39b.** Preferably, the front panel **36**, the side and handle panels **37, 38**, and the top and bottom panels **39a, 39b** are formed of a single piece of sheet steel, but other configurations, including multi-piece configurations, may be suitable for use with this invention.

The handle panel **38** includes an elongate vertical recess **40** that serves as a handle for the door **34a**; the configuration of the handle panel **38** and recess **40** is described in co-assigned and co-pending Application Serial No. 09/241,685, the disclosure of which is hereby incorporated herein by reference in its entirety. The handle panel **38**, side panel **37**, and top and bottom panels **39a, 39b** are between about 2 and 8 inches in width, thereby providing the door **34a** with a sufficient depth that the three shelves **42** of similar depth can be included for storage of small items (for example, spray paint cans).

Still referring to **Figure 4,** the door **34a** includes upper, middle and lower hooks **44a, 44b, 44c** that are attached to the handle panel **38** and extend rearwardly therefrom when the door **34a** is in its closed position. Each of these hooks **44a, 44b, 44c** includes on its lower edge a cutout portion **46** and a ramped portion **48** located rearwardly of the cutout portion **46** (**Figure 5**). The ramped portion **48** slopes upwardly from front to rear. Those skilled in this art will appreciate that other configurations and structures for engaging a pin, such as barbs, fingers, and the like, including those that may lack ramped portions, may also be suitable for use with the present invention.

Referring still to **Figure 4**, and referring also to **Figures 5-9**, a support member assembly **50** extends vertically from a central portion of the front edge of the floor **22** to a central portion of the front edge of the ceiling **28**. The support member assembly **50** includes a support member **51** having a front panel **52** that is sized such that, when the doors **34a, 34b** are in their closed positions, the

front panel **52** spans the gap between the handle panels **38** of the doors **34a, 34b**; preferably, this gap is between about 1/2 and 10 inches. The front panel **52** includes upper and lower release member slots **54a, 54b** that are oblong and generally vertically oriented, and also includes at its upper portion a rectangular, horizontally-oriented lock aperture **56**.

Transitional sections **57a, 57b** extend rearwardly from the front panel **52**, and recessed sections **58a, 58b** extend laterally from respective rear edges of the transitional sections **57a, 57b.** Each recessed section **58a, 58b** includes upper, middle and lower hook apertures **60a, 60b, 60c** approximately equally spaced along the height of the recessed sections **58a, 58b**. The support member **51** also includes side panels **62a, 62b** that extend rearwardly from the lateral ledges of the recessed sections **58a, 58b.** Each side panel **62a, 62b** includes three shelf notches **64** that receive and support the front edges of the shelves **32** of the cabinet **20**.

Preferably, the support member **51** is formed of a single piece of sheet steel having a thickness of between about 12 and 22 gauge, but those skilled in this art will recognize that other materials and configurations can be used to form the support member **51**.

Referring again to **Figures 5-9**, the support member assembly **50** also includes upper, middle and lower carrier post guides **66a, 66b, 66c** which are mounted to the rear surface of the front panel **52** in vertical alignment with one another. Each carrier post guide **66a, 66b, 66c** includes an aperture **67**; these apertures **67** are also vertically aligned with one another. Three U-shaped pin guards **68** are mounted to the lateral surfaces of the side panels **62** at a height that enables them to shield the hook apertures **60a, 60b, 60c** from the rear. Two pin cam plates **70** are mounted to the inward surfaces of the transitional sections **57a, 57b** at the height of the hook apertures **60b** and extend rearwardly therefrom. Each pin cam plate **70** includes a tapered aperture **72** that has an inclined edge **74** such that the aperture **72** is narrower at its upper end then in its lower end.

A lock channel **76** sized to receive a padlock is mounted within the

lock aperture **56** of the front panel **52**. The lock channel **76** includes in its side walls an aperture **79** that is generally vertically aligned with the apertures **67** of the carrier post guides **66a, 66b, 66c**. Shackle bolt holes **78** are included in each side wall of the lock channel **76**. A shackle bracket **77** is mounted in the rear portion of the lock channel **76** and attached to the lock channel **76** via a bolt **76b** inserted through the shackle bolt holes **78** and apertures **76c** in the shackle bracket **77**; two shackle apertures **81** are positioned in the side walls of the shackle bracket **77**.

Referring still to **Figures 5-9**, a latching mechanism **80** is positioned rearwardly of the support member **51**. The latching mechanism **80** includes an elongated, vertically disposed carrier post **82** that extends through the apertures **67** of the carrier post guide **66a, 66b, 66c** and the aperture **78** of the lock channel **76**. Mounting of the carrier post **82** within these apertures enables the carrier post **82** to slide vertically relative to the support member **51**. The carrier post **82** includes several notches in its front edge: a lock notch **84** at its upper end at the level of the lock aperture **56**; three pin notches **86a, 86b, 86c** that are approximately equally spaced along the length of the carrier post **82** and located at the heights of respective hook apertures **60a, 60b, 60c**; and two release member notches **88a, 88b**, one of which is positioned between the pin notches **86a** and **86b** at the level of the upper release member slot **54a**, and the other of which is positioned below pin notch **86c** at the level of the lower release member slot **54b**. Those skilled in this art will appreciate that configurations for a vertically slidable member other than the illustrated carrier post **82** may also be used with the present invention. For example, such a member may be formed of multiple pieces, take a shape that is nonlinear, include components for mounting pins that differ from the illlustrated configuration (such as the pins being welded directly to the member), and include a different locking strcuture (or lack one entirely).

The latching mechanism **80** also includes three horizontally disposed pins **90a, 90b, 90c**, which are mounted within respective pin notches **86a, 86b, 86c** on the carrier post **82**; these pins extend laterally in both directions from the carrier post **82** and terminate adjacent the side panels **62** of the support member

51. An upper hand release member **92** is mounted within a nut **94**, which is in turn mounted in the hand release member notch **88a** of the carrier post **82**. The hand release member **92** extends forwardly from the carrier post **82** through the upper release member slot **54a** in the front panel **52**. The hand release member **92** is preferably mounted at a height of between about 48 and 72 inches above the underlying surface to be convenient for operation by hand. Similarly, a lower foot release member **96** is mounted in a nut **98**, which is in turn mounted in the lower lever notch **88b**; the foot release member **96** extends forwardly through the foot release member slot **54b**. The foot release member **96** is mounted at a height of between about 3 and 24 inches above the underlying surface to be convenient for operation with a foot. It is preferred that the hand and foot release members **92, 96** protrude from the support member **51** no further than the front panels **36** of the doors **34a, 34b.** This configuration can eliminate any "appendage" from protruding forwardly beyond the doors **34a, 34b** that can snag a person's clothing. A finger **100** is attached to the carrier post **82** just above the middle carrier post guide **66b** and extends rearwardly therefrom.

A spring **101** is attached at its lower end to the finger **100** and extends upwardly to attach to a shelf **32**; preferably, the spring **101** is in tension when so mounted, such that the carrier post **82** is biased upwardly. Those skilled in this art will recognize that the spring **101** can be mounted to other structures in the latching mechanism **80** and cabinet **20**, can be a compression spring if mounted to a point below the finger **100**, and can comprise another type of biasing unit such as an air cylinder. Also, if the hooks **44a, 44b, 44c** or other pin-engaging structure were inverted, such that the cutout portions **46** face upwardly, the spring **101** may be mounted to bias the carrier post **82** downwardly.

Turning now to **Figure 10**, three identical bolsters **102** are mounted to the lower surface of the floor **22**. As seen in **Figure 10**, each bolster **102** includes a lower channel **104**. The lower channel **104** includes a floor **105** and two side panels **106** extending upwardly therefrom. A rear bracket **107a** includes a floor **108** that rests upon and is welded to the upper surface of the floor **105**, a front

panel **109** that extends upwardly from the front edge of the floor **108**, and a rear panel **110** that extends upwardly from the rear edge of the floor **108**. A front bracket **107b** includes a floor **111** that rests on and is welded to the upper surface of the floor **105**, a front panel **112** that extends upwardly from the edge of the floor **111**, and a rear panel **113** that extends upwardly from the rear edge of the floor **111**. The rear panel **109** of the rear bracket **107a** is aligned with the rear edges of the side panels **106**, and the front panel **112** of the front bracket **107b** is aligned with the front edges of the side panels **106**.

A castor plate **115**, upon which is mounted a castor **116**, is mounted to the underside of lower channel floor **105** below each front bracket **107b** and each rear bracket **107a**. The caster plates **115** are mounted via bolts **117**, which extend through apertures in the floors **105, 108, 111** and into weld nuts **118** or other threaded fasteners mounted to the upper surfaces of the floors **108, 111**.

When the cabinet **20** is in a latched and locked condition (**Figures 1, 5** and **9**), the doors **34a, 34b** are in their closed positions (**Figures 1** through **3**), with the handle panels **38** facing each other. The carrier post **82**, and in turn the upper, middle and lower pins **90a, 90b, 90c**, are raised into a latched position; the latched position is maintained by the section of the spring **101**, which urges the carrier post **82** upwardly until upward movement is restrained by contact between the middle pin **90b** and the upper end of the pin cam plate apertures **72**. The upper, middle and lower hooks **44a, 44b, 44c** extend through, respectively, the hook apertures **60a, 60b, 60c** and engage, respectively, the upper, middle and lower pins **90a, 90b, 90c**. A padlock **L** rests on the lock channel **76**. The body **B** of the locked padlock **L** resides in and engages the lock notch **84** of the carrier post **82**, thereby preventing vertical movement of the carrier post **82**. The shackle **S** of the padlock **L** extends through the shackle apertures **81** such that forward and rearward movement of the shackle **S** is constrained.

When the padlock **L** is unlocked (typically with a key inserted into the key end thereof), the shackle **S** of the padlock **L** loosens relative to the body **B**, such that the body **B** is free to slide forwardly and disengage from the lock notch

84 (**Figures 2, 6** and **7**). This action frees the carrier post **82** for sliding vertical movement within the carrier post guides **66a, 66b, 66c**; however, the upward biasing of the spring **101** on the carrier post **82** retains the doors **34a, 34b** in their closed positions.

The doors **34a, 34b** of the cabinet **20** can be opened by the application of a downwardly-directed force on either the hand release member **92** or the foot release member **96** (depending on which is more convenient for the operator). In either event, the force lowers the carrier post **82**, and, in turn, the pins **90a, 90b, 90c**, to an unlatched position in which the pins **90a, 90b, 90c** disengage from the hooks **44a, 44b, 44c** (see **Figures 3** and **6**). Once the hooks **44a, 44b, 44c** are disengaged from the pins **90a, 90b, 90c**, the doors **34a, 34b** can be opened with a light horizontally- and forwardly-directed force on the handle panels **38** (**Figure 4**). Once the hand release lever **92** and foot release lever **96** are released, they return (as do the pins **90a, 90b, 90c**) to the latched position due to the upwardly-directed biasing force applied by the spring **101**.

The doors **34a, 34b** can be closed without actively operating the latching mechanism **34**. As the doors **34a, 34b** are moving to the closed position, the hooks **44a, 44b, 44c** contact the pins **90a, 90b, 90c**. The ramped portions **48** of the hooks **44a, 44b, 44c** drive the pins **90a, 90b, 90c** downwardly. Notably, the downward movement of the pins **90a, 90b, 90c** is facilitated by the interaction between the middle pin **90b** and the inclined edges **74** of the pin cam plates **70**; in this configuration, the pins **90a, 90b, 90c** are urged downwardly and rearwardly and are unlikely to stick in place due to contact with the hooks **44a, 44b, 44c**. After the hooks **44a, 44b, 44c** travel rearwardly a sufficient distance that the cut-out portion **46** of each hook is above its respective pin, the pins **90a, 90b, 90c** rise in response to the biasing of the spring **101** to engage the hooks **44a, 44b, 44c**, thereby latching the doors **34a, 34b**. Again, this movement is facilitated by the inclined edges **74** of the pin cam plates, which urge the middle pin **90b** (and, in turn, the upper and lower pins **90a, 90c** and the carrier post **82**) forwardly, with the result that a firm interaction between the pins **90a, 90b, 90c** is achieved. The

cabinet **20** can then be locked by pushing the body **B** of the lock **L** into the shackle **S**, which forces the body **B** into the lock notch **84** of the carrier post **82**. The inclined edges **74** of the pin cam plates **70** also assist in keeping the carrier post positoned forwardly so that interaction between the body **B** and the lock notch **84** is snug.

As can be seen by the foregoing discussion, the storage cabinet of the present invention enables an operator to unlatch the cabinet through the use of either the hand release member **92** or the foot release member **96**. As such, an operator approaching an unlocked, latched cabinet **20** with his hands full of items can still unlatch the doors **34a. 34b** to access the cavity **29** of the storage cabinet **20**.

Further, the biasing of the carrier post **82** toward the latched position enables an operator to close the doors **34a, 34b** by simply pushing them closed rather than operating the latching mechanism **80**. This configuration also increases the likelihood that a door that the operator wishes to remain closed will do so, as he need not actively move the latching mechanism to the latched position to maintain that door in a latched condition. The likelihood of a door opening undesirably increases with doors such as those illustrated herein that, because they include shelves that can be heavily loaded, may have sufficient weight to swing open without the operator applying a force thereto, so the configuration of the present invention can be quite advantageous for such cabinets.

Finally, the structure of the bolsters **102** provides additional strength and rigidity above the castor plates **115**. As such, the likelihood of fracture associated with the mounting of the castor plates **115** can be reduced.

The foregoing is illustrative of the invention and is not to be construed as limiting thereof. Although exemplary embodiments of this invention have been described, those skilled in the art will readily appreciate that many modifications are possible in the exemplary embodiments without materially departing from the novel teachings and advantages of this invention. Accordingly, all such modifications are intended to be included within the scope of this

invention as defined in the claims. The invention is defined by the following claims, with equivalents of the claims to be included therein.